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October 2000 #164

LIVEBEARERS

Bulletin of the
American Livebearer Association

Special Issue –
Mollies and Related Species
Color Photos Inside

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*Our cover photo this month is a Veiltail Molly bred by Steve Saunders. Photo from the June, 1965 "**Aquarium Journal**"*

LIVEBEARERS

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American Livebearer Association

Number 164 **October 2000**

Contents

page

2 Chairman's Message
3 Notes from the Editor
4 Genera? Subgenera? Why Should We Care?
by Dan Fromm
11 What is the fish circulating in the hobby as *Limia (Odontolimia) garnieri*?
by Dan Fromm
14 The Tiger Limia
by Bill Kohler
22 Molly Fins
by Joanne Norton
24 From the Species Maintenance Program Chairman
by Joshua Levy
26 Species and Hybrids of Mollienisia
by Dr. Carl L. Hubbs
34 Public Service Announcement for Those With Children
by Don Dickson
38 In Our Own Backyard
by Leo Nico
42 Mollies in Florida
by Dave Hackenberg
43 Color Variations in Wild Mollies
by Linn Blanchard
45 Crescent Fish Farm and the Development of the Black Molly
by Bill Allen

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Chairman's Message:

When I first became Chairman in January I began with an idea of a number of things I wanted to accomplish – aspects of the ALA I wanted to encourage and expand. We have come to a time when many of those first ideas are now taking shape and the results of these efforts of the last nine months are beginning to become obvious.

The Trader has an entirely new look thanks to Dr. Ted Coletti, and the *Livebearers* has been redone to include articles that we have heard are desired by those of you that have written us, and color photos such as those in issue #162. We are also working to secure our nonprofit, tax-exempt status with the IRS and will ask that you vote on revisions that have been made in the ALA's Articles and Bylaws in November's *Trader*.

One of the aspects of the ALA I wanted to emphasize is the community that we are all a part of by simply being a member of the ALA. Many of the fish kept by our members can be found no where else, are endangered or may even be extinct in the wild, and are available to any member that contacts someone offering fish in *The Trader*. However, simply because the fish you are looking for is not currently being offered does not mean that it cannot be had! If you do not see the fish you are looking for, or do not know yet which species you would like to keep, you can contact me or any of those listed as offering assistance in *The Trader*, and we may be able to locate a breeder that has those fish to offer, either locally or to be shipped to you.

Most breeders need to find someone to share the fish with, and without exception everyone that has cared for and developed the numbers on a species would like to introduce them to another hobbyist. The good part is that if something happens, and your first attempts aren't entirely successful, there are always more where the first ones came from! Most are not at all difficult to keep, some have been in the hobby years ago but have fallen out of favor, and yet are still available through someone in the ALA. There is nothing like showing a fish in your own tank that is rare or that you may be helping to save from extinction! Please consider it, these efforts by you are a big part of what the livebearer hobby is about, and we need those of you that are not keeping some of these fish to give it a try!

'Till next time,

Greg

Notes From The Editor:

One of the best loved and most popular livebearers of all time is the black molly. When I got my first stainless-steel-sided ten gallon aquarium my parents naively decided that we would not get both males and females of the same kind of fish. This was so we wouldn't have baby fish all over the place. But my Uncle Bobby from Lafayette, Louisiana saw my aquarium and decided that he wanted to get some fish for us. After he returned from the TG&Y with a bag of fish he said, "The lady at da sto' said somethin' about da black one bein' pregnant". And the rest is history. Little black mollies were soon in every container we could find (By the way, Bobby's son – my cousin – is now a marine biologist for the state of Louisiana. Could there be a connection?).

If what I see at the fish stores in my area is any indication the good old molly is being reborn. Almost every local fish store has mollies of gold (at least two different shades), green, silver, chocolate brown, "dalmation" and even black, with combinations of the above. And don't forget the albino! Several fin types are also available. Love 'em or hate 'em, there are even "balloon mollies", reminiscent of fat, Moor-type goldfish. These modern mollies also seem to be a bit hardier than in the "old days". Once you could find entire tanks of mollies in stores doing the pitiful "molly shimmy" – but the ones I've seen lately seem to be holding their own even in a dealer's less than ideal conditions.

There is also something for you in the molly family if you are interested in species preservation. Several new species of mollys have been discovered or named and are now available to fish keepers interested in the wild exotics. Several species of *Poecilia* are listed by NANFA as threatened or by the IUCN as vulnerable. Add the very-closely-related group of *Limia* and the horizon is expanded even more. Many of these fish are being kept by ALA members interested in species preservation.

I hope there's something in this special "Molly and Related Species" issue of "Livebearers" for you.

Bill Allen

Genera? Subgenera? Why Should We Care?

By Dan Fromm

Bill Allen asked me to contribute a piece on '*Poecilia* and its subgenera' to this issue of Livebearers. I'm acquainted with only a few members of the genus *Poecilia* in the broadest possible sense, none in the genus or, according to some, subgenus *Pamphorichthys*. I therefore can say very little about their captive maintenance except the well-known facts that all of them are livebearing and do better in the aquarium if kept wet. In my limited experience, none tolerates desiccation. Dry humor, folks.

I. The rules, as I know them

Abstracting away from *Poecilia*, no decision between the two positions "this subgenus is a good genus," and "it is just a subgenus" is possible as long as the genus and its constituent subgenera are monophyletic (= contain all descendents of a presumed common ancestor). Whether two monophyletic groups that are sisters, i.e., share a most recent common ancestor, are better treated as one genus or two, or even more if one can be split further into monophyletic sister groups, seems to me largely a matter of taste. In this situation, "one genus" isn't a hypothesis that can be tested against the alternative "two genera," both are somewhat arbitrary decisions.

The one rule I've learned that bears on the question -- a genus **must** be monophyletic -- says nothing about when to split a monophyletic group or not lump sister groups. This leaves substantial room for subjectivity and wrangling about where to split that is sometimes, but not always, pointless. Be warned that my view -- that whether and where to split a monophyletic group is a matter of taste -- is not held by all working systematists. It may reflect my substantial lack of education. Remember, I'm wrong a lot.

What all of this means is that if *Poecilia* is monophyletic and each of its subgenera is monophyletic, there is no objective way to decide whether to treat the subgenera as genera.

II. Taxonomic history -- who's monophyletic?

Rosen & Bailey (1963) lumped a number of genera into *Poecilia* Bloch & Schneider 1801, keeping some, but not all, as subgenera. Their *Poecilia* includes the subgenera *Poecilia, Lebistes*, *Pamphorichthys*, and *Limia*. *Micropoecilia* Hubbs 1924 is used by some aquaristic authors; Rosen & Bailey (1963) found it to be a junior synonym of *Lebistes* de Filippi 1861, as have the two most recent reviews (see below), so we shouldn't use it.

Since 1963, there have been relatively few changes in *Poecilia* systematics. Rivas & Fink (1970) resurrected *Limia*. Miller (1975) resurrected *Mollienesia*. Rivas (1980) split *Limia* into two subgenera *Limia* and *Odontolimia*. Rauchenberger's (1989) restatement of Rosen & Bailey's classification does not recognize *Mollienesia* or *Odontolimia* as subgenera of *Poecilia*; she places them in the subgenera *Poecilia* and *Limia* respectively. Meyer (1993) reinstated *Micropoecilia*. A few new species have been described. None of these papers proposed phylogenies for the tribe (see below) Poeciliini or for *Poecilia*.

Rosen & Bailey's (1963) classification of their Poeciliidae into genera, and the genera into tribes, is not phylogenetically based; there's no reason why it should be, as they wrote before phylogenetic systematics had been, practically speaking, invented. It therefore isn't safe to assume that any of Rosen & Bailey's groups is monophyletic. Making the assumption can lead to incorrect conclusions.

Bisazza et al (1997) addressed the supertribe Poeciliini's monophyly using the mitochondrial ribosomal 16S gene, with a *Rivulus* as outgroup. Their Maximum Parsimony and Maximum Likelihood trees suggest that the tribe Poeciliiini is not monophyletic, but this result is not strongly supported. They included only one *Poecilia* species, *P. reticulata*, so their study says nothing about relationships within the genus.

Rodriguez (1997) addressed the tribe Poeciliini's monophyly with morphological data, and in my opinion resolved little. He asserted monophyly of *Poecilia* in the broad sense and presented characters of Rosen & Bailey's subgenera *Poecilia*, *Limia*, and *Pamphorichthys* that justify, for him, treating each as a genus. He synonymized *Lebistes* with *Poecilia*, recognized *Mollienesia* as a subgenus of *Poecilia*, and doesn't accept *Micropoecilia*. This leaves *Poecilia* with two subgenera, *Poecilia* and *Mollienesia*. As I read them, his trees are shaky, and he didn't test them against alternative

phylogenies for *Poecilia*. In addition, they contain only members of the tribe Poeciliini; this prevents a test of the tribe's monophyly. He nonetheless suggested that *Alfaro* and *Priapella* do not belong in the tribe. Using more characters and more taxa inside and especially outside the tribe, and conducting formal tests of phylogenetic hypotheses against alternative phylogenies might lead to more convincing results. Glen Collier and I found this to be the case in our work on *Brachyrhaphis*.

Breden et al. (1999) studied relationships within *Poecilia* (in the broad sense), using the mitochondrial NADH subunit 2 (ND2) gene with *Heterandria formosa* and *Xiphophorus nigrensis* as outgroups. *Poecilia* came out sister to *Xiphophorus*, as in Rodriguez (1997). Their molecular data is richer (offers more characters) than Rodriguez' morphological data, and they had more taxa. This permitted them to build a larger phylogeny of species. Their best arrangement differs from Rodriguez' in having *Lebistes*, which includes *Micropoecilia*, separated from *Poecilia*, which contains only the "mollies." They recommend no taxonomic changes from Rosen & Bailey (1963) until relationships in the genus are better understood.

A word on notation. Parenti (1981) made the family Poeciliidae of Rosen & Bailey (1963) the subfamily Poecilinae. The livebearing fishes we're used to thinking of as poeciliids fall, in her classification, in the supertribe Poeciliini, which includes, among others, the tribe Poeciliini. To avoid confusion here, I use tribe Poeciliini (*Poecilia* and supposedly closely related genera) or supertribe Poeciliini (all of 'em) as appropriate. Parenti's classification is generally accepted, but recent papers, including a poster I presented at this year's ASIH meeting, still use the old word Poeciliidae for her supertribe Poeciliini. Conservative and wrong, but educated readers know what the word means.

III. What to do? What to do?

From an aquaristic point of view, where subgenera sit is irrelevant. Nothing we know about husbandry will change if any of *Poecilia*'s subgenera is raised to genus. Our concern about their status is somewhat misplaced.

As far as I know, no one has yet produced a well-supported phylogeny of the genus *Poecilia*. No one, therefore, can say anything about phylogenetic relationships within it. Nothing solid, as solid is

now understood, is known.

So what should we poor aquarists do? We won't go far wrong if we follow Rauchenberger's (1989) largely non-phylogenetic restatement of Rosen & Bailey's (1963) classification. We also won't get into trouble if we follow Rodriguez (1997) and treat *Poecilia, Limia,* and *Pamphorichthys* as genera, treat *Mollienesia* as a subgenus of *Poecilia* (the other one is *Poecilia*) and recognize *Lebistes* as a synonym of *Poecilia*.

Neither of these approaches to the higher systematics of the genus *Poecilia* impedes clear communications. Both, however, lack phylogenetic support and are probably wrong. We therefore have no reason to fight about the ranks genus and subgenus in the tribe Poeciliini. We should be patient and wait for working systematists to sort things out. This may even happen in our lifetimes, thanks to the advent of relatively inexpensive and potentially very effective molecular methods.

Whatever we do, we **must** be clear about what we mean when we say *Poecilia dominicensis*. The genus *Poecilia*, in the broad sense, contains two species described as *dominicensis*, and has room for only one. They are *P. dominicensis* Evermann and Clark 1906 (= *P. montana* Rosen & Bailey 1963) and *L. dominicensis* Valenciennes 1846, which has priority. Using the full name, including describer and date, will eliminate ambiguity about which fish is being discussed. If you believe that *Limia* is a subgenus of *Poecilia*, use *P. montana* Rosen & Bailey 1963 and *P. dominicensis* (Valenciennes) 1846. If you believe that *Limia* is a genus, then use *P. dominicensis* Evermann and Clark 1906 and *L. dominicensis* Valenciennes 1846.

I think it is best, as a practical matter, to communicate clearly about our fishes without regard to "scientific correctness." The killifish hobbyists who follow every twist and turn of W. J. E. M. Costa's line on rivulids may disagree, but I note that after a decade of roughly biennial revisions they have trouble communicating among themselves about what fishes they have. As a practical matter, unless a revision splits or suppresses many previously described species, there's no great benefit from following it until it has been accepted by working professionals. If you doubt this, look at the headaches caused by guesses at the ultimate outcome of revisionary studies of Central American cichlids that have hardly started yet. There's much to be said for conservatism in the taxonomy used in the hobby.

IV. Nag, nag, nag

The attention we aquarists give to higher systematics and to being "scientifically correct" about classification, is, in my opinion, wasted. We would do better to learn how to identify the fishes we have so that we can protect ourselves from mistakes, and sometimes deception, committed by the people from whom we get them.

There are far too many such errors. Here are a few examples. My piece on Dom Isla's purported *Limia garnieri*, which should appear in this issue of Livebearers, discusses one. A verbal characterization of Mr. Isla's purported *Limia rivasi*, kindly sent me by Ivan Dibble, points to another. Verbal characterizations are often useless for species recognition, but this one (the key words are "big dorsal") is enough to suggest there's a big problem with calling the fish *L. rivasi*. Two years ago, I think, someone came to the ALA annual meeting with at a bag of *Brachyrhaphis holdridgei* he was convinced were *B. parismina*, a very different fish indeed. Three years ago I was shown some purported *L. grossidens* that were in fact *L. nigrofasciata*. Several centuries ago, I very nearly bought back progeny of progeny of my own *B. rhabdophora* (to add to the confusion, now *B. olomina*) that were passing as *B. episcopi*. Slightly more recently, when I was first introduced to the famous aquarist Ginny Eckstein she proudly showed me a bag of fish she had just bought as Merry Widows, *Phallichthys amates*. Her new babies were a *Gambusia* species. Many of us have had similar bad experiences.

We aquarists and our sources have great trouble getting simple things like putting names on fish and then keeping them straight right. This is where we should focus our efforts to be correct. Basing identifications on matches to picture books is too dangerous for words. Thanks to interlibrary loan, University Microfilms, and copy machines the relevant literature is available to most of us. Thanks to eBay and, more generally, the Web, what seem to be relatively inexpensive usable stereo microscopes aren't too hard to get. Believe it or not, reference specimens aren't totally inaccessible. I hope that more of us will look closely at our fishes instead of swallowing possible misidentifications. Our little fishes' little parts are beautiful; seeing them can only deepen our appreciation of the fishes. And, finding out just how difficult taxonomy can be will do us all good. One caution: the supertribe Poeciliini has many undescribed species, so when we can't identify a fish we should call it Genus sp. from source rather

than forcing it to be one of the named species in its genus. "I got it to genus, can't decide which species it is" is perfectly ok, and much better than using an incorrect name. We also shouldn't coin names. Using a name without a proper formal description can make the name unusable in a proper description. The killifish community deals with wild fish by using Genus species (or sp. when they don't know what it is) collector's site number; adopting this convention wouldn't hurt us if we could manage not to lose labels.

A group of ichthyologists recently published a document deploring the harm done by amateur systematists and urging museums and journals to discourage them. To prevent unwitting harm, they've asked that the following text be appended to nearly every publication which addresses systematics. This publication is disclaimed for purposes of Zoological Nomenclature in accordance with the International Code of Zoological Nomenclature, Fourth Edition, Articles 8.3 and 8.4. No new names or nomenclatural changes are available from statements in this article/publication. I sympathize with their aims even though, as an amateur systematist I resent anathematization.

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What is the Fish Circulating in the Hobby as *Limia (Odontolimia) garnieri*?

By Dan Fromm

Bill Kohler, of Maumee, OH, recently gave me a mature male of a fish he thought was *Limia (Odontolimia) garnieri* for use in a study of poeciliid phylogeny that Glen Collier, of the University of Tulsa, and I are working on. He tells me that he obtained the stock from Dominic Isla and that the fish is circulating in the hobby under the name *Limia (Odontolimia) garnieri.* He believes that Mr. Isla collected the fish in Haiti.

I examined the specimen before sending it on to Professor Collier for a DNA work up. It is not *L. (O.) garnieri*, or even an *Odontolimia*. It is instead an undescribed *Limia (Limia)* species.

I doubt that Bill's fish is a *Limia* (*Odontolimia)* because it better matches Rivas' (1980) characterization of the subgenus *Limia* than it matches *Odontolimia.* Among the characters that differ between the two subgenera:

teeth: < 25 in the outer row, upper jaw in *Odontolimia*, >= 25 in *Limia*. Bill's fish has > 30.

teeth: < 30 in the outer row, lower jaw in *Odontolimia,* >= 30 in *Limia*. Bill's fish has > 30.

teeth: outer row, both jaws, conical or incisorlike in *Odontolimia*, spatulate in *Limia*. Bill's fish has spatulate teeth in the outer rows of both jaws.

preopercular canal: forming an open groove in *Odontolimia*, not so in *Limia*. In Bill's fish, the groove is not open.

Because of these differences between Bill's fish and its author's definition of *Odontolimia*, it can't be an *Odontolimia*, so it can't be *L.(O.) garnieri*. Moreover, it differs from *L. garnieri* on a number of characters that Rivas thought important. These are:

color pattern: "dark crossbars on sides of body of male 9, oblong, irregular in size" in *L. garnieri*. In Rivas' figure of the male holotype, the crossbars do not run from top to bot-

tom and are somewhat broad, roughly 2-3 times as high as wide. In Bill's fish the 9 dark crossbars are very thin and run from top to bottom. It is quite unlike Rivas' figure and text. Rivas' figure was used in Lee et al (1983), which may be more accessible. I note in passing that *L. garnieri* can be separated at sight from all other Miragoâne *Limia* because of these bars.

gonopodium: "Ray 4p serrae of gonopodium 12. Segments distal to ray 4p serrae 16." In Bill's fish, these counts are, respectively, 8 and 12.

We need to assign a name to Bill's fish to be able to communicate about it. I suggest that we call it *L. garnieri* NOT! This would make people aware that there are fish mistakenly identified as *L. garnieri* around. As an alternative, we could refer to it as the Small Banded Yellow *Limia (Limia)* from Miragoâne. This would differentiate it from the other Miragoâne *Limia*s and from banded *Limia*s from other places *(See Bill's article – he's calling it the "Tiger Limia" - BA).*

I believe that the fish has been collected before, and that there are specimens in the collections of the Academy of Natural Sciences, Philadelphia and the Florida State Museum. George Burgess, of the Florida State Museum has them all, and has a description in process. It would be the height of impoliteness for someone else to jump in and put a name on the fish. I don't believe that my characterization of it above comprises a valid description, and I do not intend this note to be read as an attempt to describe it.

People make mistakes when identifying fishes. This fact of life will always be with us. Mr. Isla's slip -- I assume, perhaps incorrectly, that he identifies the fishes he collects -- points out the importance of going back to primary sources, not picture books written for aquarists, and of looking at the fine details when trying to put a name on a fish. Picture books written for aquarists are especially dangerous. There's no way of knowing how the books' authors or publishers associated names with pictures, and every reason to doubt that they got it right.

Most of the characters that are useful for telling one poeciliid from another are invisible to the naked eye, either because they're tiny or because they're internal. Recognizing fishes the way we aquarists do, i.e., by gestalt, sometimes works and sometimes

doesn't. The only safe way to know them is to look very closely.

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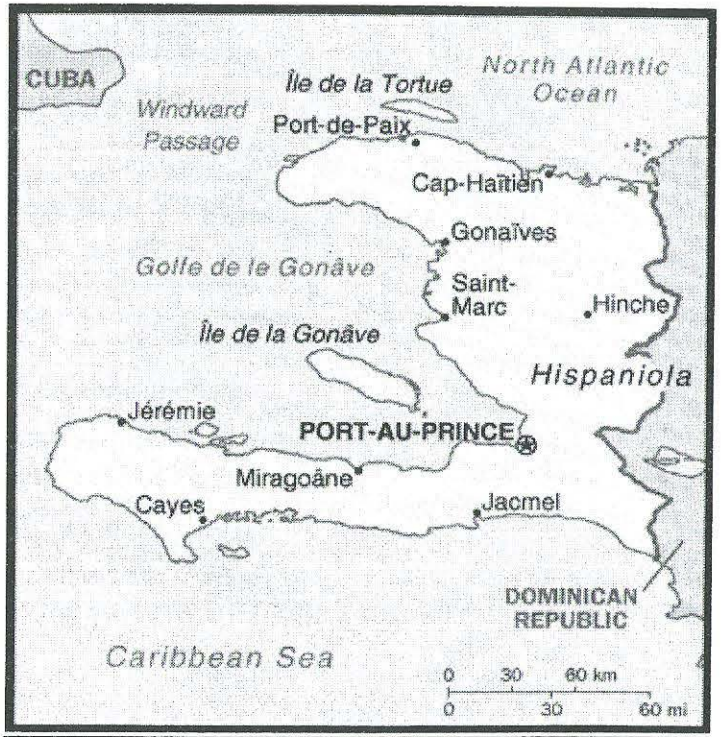


HAITI

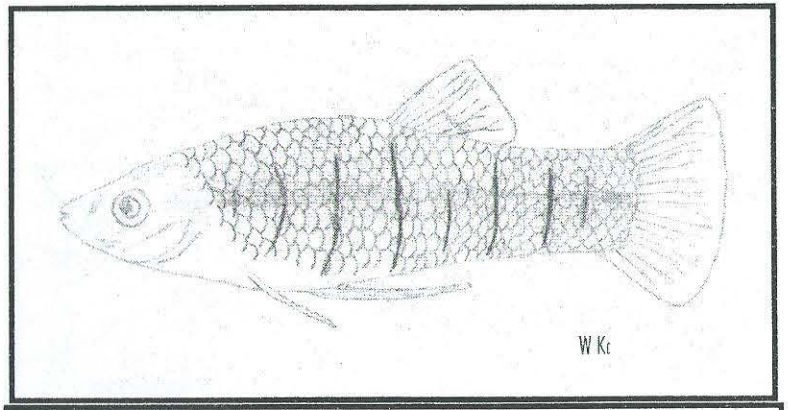
Lake Miragoane, the home of many species of Limia, is located immediately to the southeast of Miragoane, which can be seen near the center of the map.

The Tiger Limia

by Bill Kohler

In the hobby is a fish species which has been known as Limia garnieri, collected in 1998, at SW Bight Lake Miragoane, Haiti. Dan Fromm discovered that the correct scientific name of this species is not
Limia garnieri and has told me that the species is in the process of being described and named. For the purpose of this article I am referring to this fish as the Tiger Limia, due to the attractive striping on the fish.

I was able to get one pair of what I now call Tiger Limia, in late spring of 1999 from Dominic Isla's Coco Island Aquatics. I had not seen pictures of this species before getting it, so I was very pleasantly surprised by its attractive coloring. Both sexes have what I think of as tiger stripes -widely spaced uneven black vertical stripes over their bodies, a bit like a tigers. The fish have body coloration similar to L. nigrofasciata, with the black stripes over a light brown body, the male having more intense color than the female.



The "Tiger Limia" - Limia sp.
Drawing by the author

The fins of the Tiger Limia are very different from those of L. nigrofasciata. The caudal fin has no black at all in my Tiger Limia, it does have a light yellow in near the base of the fin which fades to colorless by about halfway out the fin in both sexes. The dorsal fin has a black spot near the front of its base which is very apparent in the juvenile fish. As the fish mature this black spot fades, and in the males the spot cannot be detected at all in most individuals, while in the females it appears as a faint incomplete border starting at the middle of the front of the base of the dorsal and extending as an incomplete line to about one third of the way towards the back of the fin. Below this area in both sexes is a very light yellow color, above it is colorless. Some of the yellow may be the result of daily feedings of brine shrimp.

I have noticed a difference in intensity of the color among the fish with the males being on average more intense. More striking has been the difference in intensity of the coloration of my two colonies of fish. As soon as I was able to start a second colony, I put some of the fish into a second tank. Not by any plan, one colony has ended up over yellow gravel while the other colony has ended up over dark blue gravel. Both are in single species tanks that are heavily planted. The colony over the yellow gravel has a much lighter body color, appearing nearly colorless with the black bars thinner in width in the male, and reduced to nearly vertical spots in the females. The juvenile fish also have much fainter black barring in the colony kept over yellow gravel, with some of the fish appearing to be without the black bars at first glance. The fish over the dark gravel have a darker body color and darker more apparent black barring in the adults, with the juvenile fish having very apparent barring also. Both colonies have been reproducing well.

The shape of the Tiger Limia is not at all like nigrofasciata. The Tiger Limia does not have the hump that nigrofasciata has. The Tiger Limia also remains much smaller than nigrofasciata. The Tiger Limia young are about 3/16 of an inch when they are born, and have been plump, or filled out as opposed to the thin young that some of the Limias have that I've kept. Tiger Limia adults so far have grown to about 1 1/4 inches for the male and about 1 1/2 inches for the females. The original pair I got looked very good, they were young and just entering their prime. They have since aged and died leaving a thriving colony.

The original collection data came with the fish, and reported that they had been collected in 1998 at the southwest Bight of Lake Miragoane in Haiti. I decided against trying to replicate Lake Miragoane or the southwest Bight due to a lack of space (the Lake looks kinda big in the pictures), so I put my pair into a ten gallon

tank with medium dark gravel containing java moss, hornwort, and some small shells and rocks to provide a refuge for the young I was hoping for. I also put a plastic grid in the tank, dividing the tank in about half to provide a place the adults could not pursue the young just in case they were so inclined. Sometimes the divider works, sometimes it is irrelevant, and sometimes the baby fish just don't get it (or maybe the parents coax them over for a snack). As a divider I use the plastic grid or mesh that are meant for sewing or crotchet sold in fabric stores. This plastic grid in the stores I've been in have two sizes of openings and I use either size for the Poeciliids since the young will fit through either. I happened to use the larger size this time since it was available, and there was no chance the adult pair could get through the grid.

I make water changes of ten to twenty-five percent once a week in all my tanks, and I did the same for the Tiger Limia. For the first few weeks after getting the fish I kept close attention that the fish didn't become stressed from the addition of the new water. Ten to twenty-five percent water changes once a week have worked well for my regimen. I know this is slightly less than the ten thousand or so percent daily changes that some shareholders of municipal water systems promote as the key to healthy fish, but it is more water exchange than the lakes that I'm familiar with. I knew the fish would me give a clear message if the conditions were poor in the usual manner, by dying. As a side note, I have never been very successful at maintaining past one or two generations the species which have their origins in swift water(rivers), generally species like Xiphophorus and Poeciliopsis although I may happen on a system that works for me some day.

Meanwhile a little more than a month after getting the fish I found young present in the tank. There were five and they seemed to know enough to stay on the side of the divider away from the adults, so I left them in the same tank. I was glad I used the wider grid as the young were thicker bodied than I had thought they would be. That, plus the adults being younger, made the small number of fry reasonable. I always leave the young in the same tank as the adults if possible because I have always 'imagined' that the fry grow better and mature earlier than if they are separated. It also conditions the adults to having smaller fish present. Nonetheless after a month I removed three of the fry to their own tank so that all the fish wouldn't be in the same basket (or tank as it was) since the female was obviously going to be giving birth again soon and I didn't want too much competition between the older fry and the new fry. Leaving two young in with the

adults kept the adults conditioned to seeing small fish.

Thirty-nine days after the first spawn, I found seventeen more young swimming around. A few of these young remained on the adult side of the divider, and the adult pair did not pursue them. The next interval between fry was forty-one days and the next fifty-eight. By now it was October so the longer intervals between broods was normal.

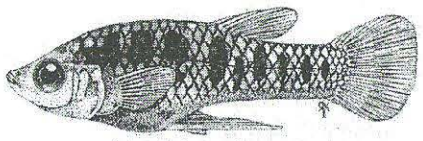
About two weeks after the third batch of fry, I moved the other two fish from the first spawn to the ten gallon tank containing their three brood mates, and put all the other fish, which by now consisted of the original pair, seventeen from the second spawn and thirteen from the third spawn into an eighteen gallon tank.

By the winter the interval between the fry drops increased to over two months. By February the fish born in July (the second spawn) started dropping fry. It wasn't until the end of March that I found babies from the five original young of the first spawn from the pair I got. Or it could be the first spawn had young earlier that didn't catch on to swimming to the nonadult side of the tank divider.

After the colony was established I've had young present continuously and the adults don't pursue them. Certainly some babies are taken by the adults but not that I notice. I have put a few of these fish in my nephews community tank (it has extremely hard alkaline well water, and no water changes) with other Poeciliids (L melanogaster, L sulphurophila, H. formosa, Endlers livebearer and Merry Widows -each from species tanks) and they have not done as well as I hoped they would. After a month only one male of the reverse trio was still alive. I added another pair and a month later there was a very healthy pair left. This pair did successfully reproduce before the female died. Since the Tiger Limia were the largest fish in the tank by a small margin, they apparently just weren't as hardy as the other fish which have done better with the exception of the H. formosa which suffered similar losses as the Tiger Limia. The formosa losses are more easily explained since they were the smallest fish, and had the greatest adjustment having to go from an unheated cool tank to a heated warm tank. Both the formosa and the Tiger Limia are only a one or two generations removed from their wild populations, so maybe a few more generations in aquariums might increase their hardiness in community tanks.

I feed the Tiger Limia like I do the other Limia that I keep, giving them flake food in the morning as close to the first light (or lights on) as I can. Since the births are usually around dawn, feeding early in the morning will decrease the adult fishes appetites and give any new fry a chance to 'find their feet' before the adults get bored. I follow the flake food with some newly hatched brine shrimp within the hour, further decreasing the adults appetites and giving any new young a chance at a first meal During the winter months I am not as diligent about giving the brine shrimp, and the fish may get brine shrimp only two to four days a week. I decrease the intervals of brine shrimp in the winter because most of the fish either stop or slow down their reproduction during that time, so I follow the fishes rhythm and stop giving them as much high energy foods. I also decrease the length of time that the lights are on, going from 12-13 hours in the summer to 10-11 hours in the winter. These changes are done suddenly, after I notice a drop in temperature in the basement, and a decrease in the number of births among the fish. By spring I again feed daily or near daily feedings of brine shrimp either before or after the fish pick up their breeding cycles (depending on if I'm paying attention to the calendar -this year the fish started dropping fry first). I don't feed in the afternoon or evening, originally this happened because my daily schedule didn't allow it during the week. Since then I found the water stays cleaner and most fish do just as well.

Order Cyprinodontiformes
Family Poeciliidae



Haiti: North end of Lake Miragoane, male, 26 mm SL (NCSM).

*Will the real Limia garnieri please stand up?.... This is it, from NC Museum of Natural Sciences (R. Kuhler); **Atlas of North American Freshwater Fishes**, 1983 Supplement. Used by permission*

The Tiger Limia is attractive and has done well under the conditions I've provided. Hopefully this species will remain in the hobby.

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Number 1: General subjects, from LIVEBEARERS 1-42 (1972-1978) compiled by Joanne Norton.

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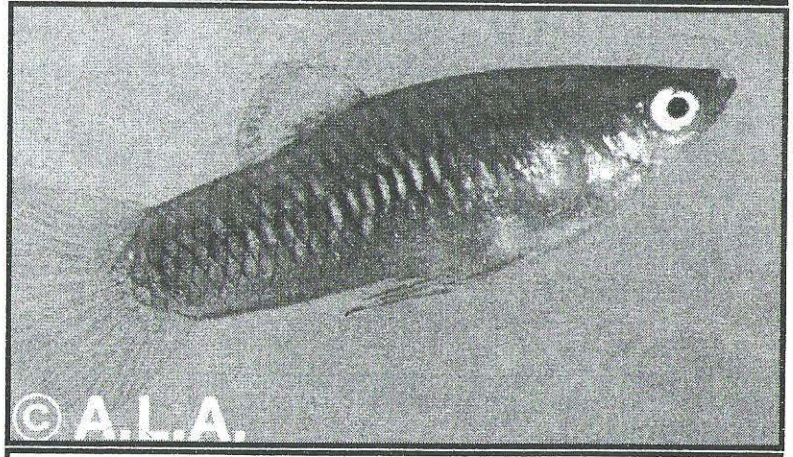


Limia dominicensis (Valenciennes)
From the ALA Slide Collection

Molly Fins

By Joanne Norton

(This article originally appeared in ***Livebearers*** *2:2. It is also available in ALA "Special Publication Number 3, The Genus Poecillia, Mollies, Limias, and Related Species")*

Many petshops usually stock common as well as lyretail mollies. They also may have sailfin mollies, although not regularly, but seldom offer good veil mollies. There are also various combinations of lyretail, veil, and sailfin. The purpose of this article is to summarize molly fin types.

The size and shape of the dorsal fin in wild mollies varies greatly among species. The number of dorsal fin rays ranges from as few as eight in some species to as many as eighteen in Poecilia velifera. Dorsal fin size varies from small in some species to the huge dorsal of the sailfin mollies (P. velifera, P. latipinna and P. petenensis). Thus the large sailfin of our aquarium-kept mollies is a feature of wild mollies, not a result of domestication.

The other fin variations in mollies, lyretail and veil, are due to mutations that occurred in aquarists' stocks. No lyretail or veil mollies have been found in nature. The mutation that resulted in lyretail occurred earlier than the mutation that produced veiltail. Lyretail mollies in various colors are inexpensive and readily available. We also have lyretail sailfin mollies, which were produced by crosses of lyretail X sailfin. While it is easy to find lyretail mollies, it is not always easy to find good ones. Some have small, poorly formed or even deformed tails. The worst specimens have lyretail extensions that appear bent or broken instead of having the shape of a wide, clean arc.

Veil molly quality also varies greatly and really good veil mollies are still scarce and expensive. A full-grown veil female may have a 1 to 1 ½ inch wide tail, which I call a small-tail veil. A full-grown female large-tail veil molly can have a tail as wide as 2 ½ inches, which makes the fish spectacular. Large-tail veil mollies, which were developed from the small-tail veil type by Steve Saunders, obviously are the kind of veil mollies that we should work to establish. So far I have seen only the green, speckled and marble large-tail veils. All of the black veils that I have had were the small tail type, although I have had some very darkly speckled (almost black) ones that were large-

tail veils. It remains to be seen whether we can develop large-tail black veils.

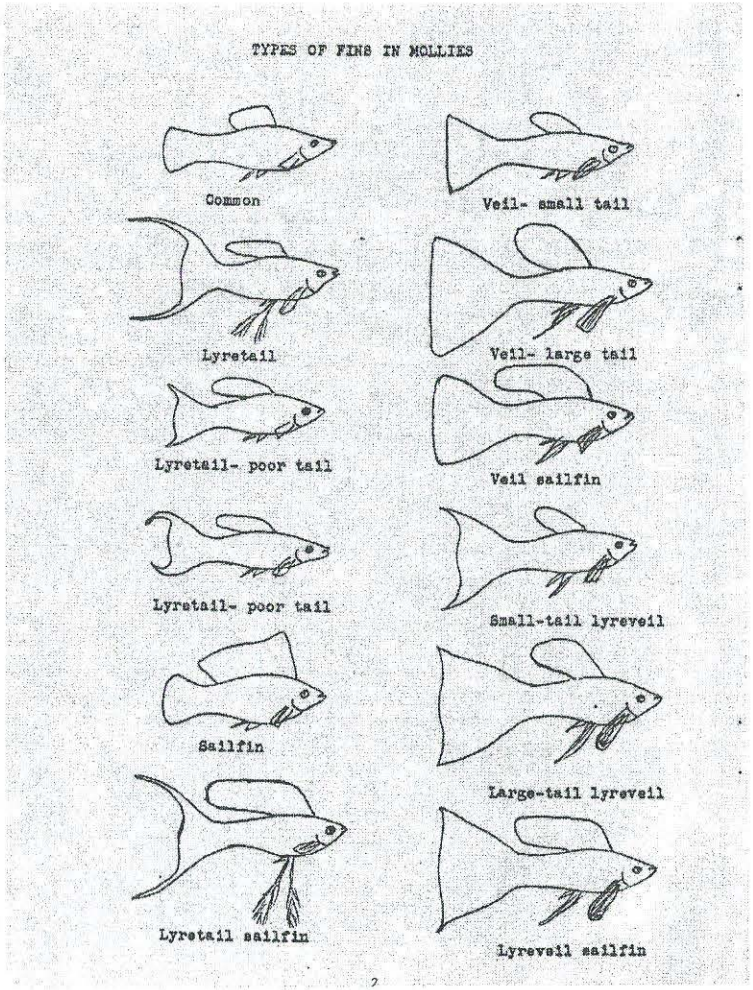
I have obtained sailfin veil mollies by crossing a veil female with a sailfin male. The dorsal fin of the veil offspring has been fairly large in some individuals but not as large as the dorsal fin of a top quality sailfin molly.

Lyretail and veiltail are each due to a separate dominant genetic factor. Crosses of a female veil molly with a male lyretail will produce some offspring that have inherited both lyretail and veil. These, which I call lyreveil mollies, are of two possible types. One looks much like a lyretail but has a slightly fuller tail; this I call a smalltail lyreveil. The other, which I call a large-tail lyreveil, has a large veiltail with two very short points or extensions. A large-tail lyreveil therefore closely resembles a veil molly, while a small-tail lyreveil closely resembles a lyretail molly. It is difficult to distinguish a veil from a large-tail lyreveil in young fish, and in fact is impossible when they are only a few weeks old. However, at two or three months, the points develop on the tail of the large-tail lyreveil. In raising veil mollies, I would avoid crossing them with lyretails because of the difficulty in telling a veil from a large-tail lyreveil in young fish. Also, a lyreveil, since it will produce some lyretail offspring, will not produce as large a proportion of veil offspring as you can get from a veil. Another disadvantage of using lyreveils in breeding veil mollies is that the lyretail trait widens the tail of the lyreveil. Therefore, a wide-tail lyreveil in some cases is genetically poor for gene modifiers that affect the shape of veiltail. The result is that the veil offspring from some lyreveil females may all have narrow tails.

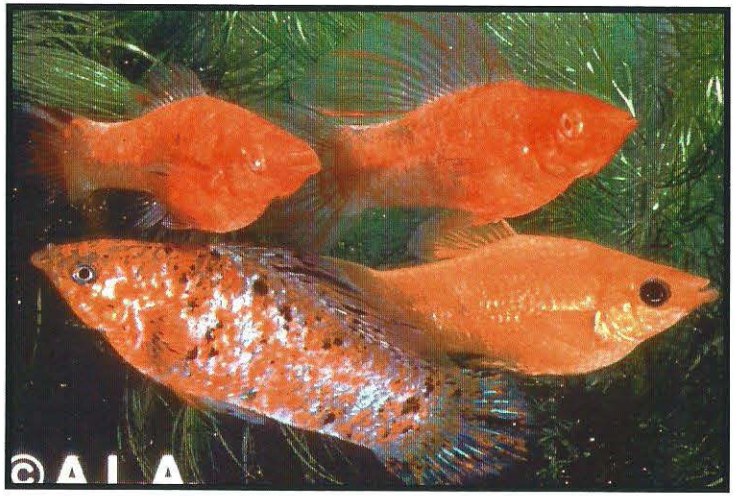
The types of offspring that you can expect from various crosses are:

Common X common: common
Lyretail X common: lyretail, often some common
Veil X common: veil, common
Lyretail X veil: either (1) lyreveil and lyretail,
or
(2) Lyretail, veil, lyreveil, common
Lyreveil X common: either (1) lyreveil and lyretail
or (In most cases)
(2) Lyretail, veil, lyreveil, common

Poor productivity sometimes is a problem in raising veil mollies. I think it may help this problem if you use common, not veil, males to cross with veil females, as it appears that not all veil males are good breeders. From a veil female crossed with a common male, you will get 50% veil and 50% common. Some veil females are not very prolific even when bred to common males, but other veil females can produce large broods of about 100 young.



ALA Exclusive Molly Photos



The following photos of fancy and wild mollies and Limia are by ALA founder Dr. Joanne Norton. Some of them have rarely or never been published before and are copyright by the American Livebearer Association. They are part of the ALA's reference slides which are available at cost to members for display at aquarium society meetings, research, and other purposes. To order slides or for more information contact ;

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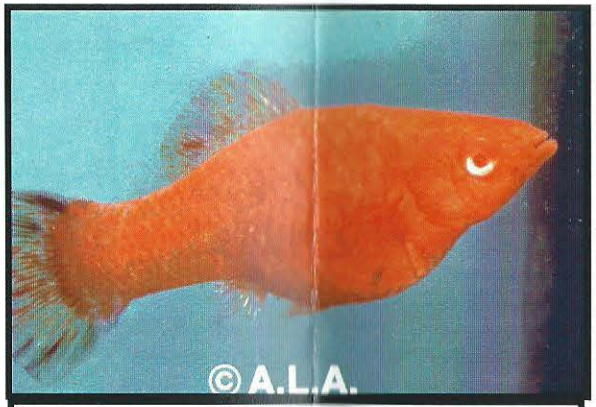
Domestic Fancy Mollies

Gold Dust Lyretail Sailfin

"Peach"
(F2 cross – Albino X gold morph cave molly)

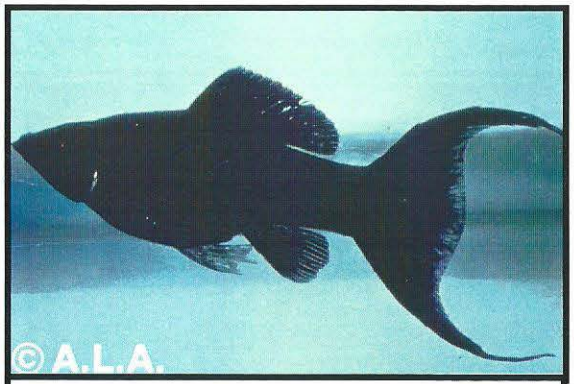


Red Sailfin Strain

Chocolate Sailfin

Albino Sailfin

Sunset Male, Sailfin Strain



Black Lyretail

Wild Molly from Yucatan
ID uncertain

Wild Mollies And Limias

Poecillia butleri
(listed as "threatened" by NANFA)

Limia versicolor

Limia caymenensis

From the Species Maintenance Program Chairman

By Joshua Levy

As part of the Species Maintenance Program, the ALA is doing a census of what fish we have. In order to make it as easy as possible, I have set up an on-line form for you to fill out. It should only take 2-3 minutes; maybe 5 or 10 if you have a lot of fish. The form is here:

http://www.livebearers.org/smp/smpform2.htm

Thanks very much for taking part. All of our species maintenance efforts must be based on knowing what species we have, so this information is critical. Even if you only keep common species, please still fill out the form! You never know when a common fish will become rare, or when another member will be looking for the particular strain you have.

Joshua Levy

Livebearer Information Service

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Tech. Editor's Note: The following article by Dr. Carl L. Hubbs contains some fascinating insight to the natural history of mollies and to the state of their taxonomy before 1950. A great deal has happened in the fifty years since this piece was written. Not only have the tools available to taxonomists changed (e.g., the use of DNA and enzyme analysis as well as great advances in chromosomal evaluation using morphology and ploidy levels) but also many populations have been discovered and evaluated that were unknown then. Dr. Hubbs was rather critical of his predecessors but by contrast, today essentially no systematist would use the taxonomy that Dr. Hubbs used at that point in time. Today the mollies are considered members of the genus *Poecilia*. Although the mollies did continue to receive special recognition for several decades as a subgenus – e.g., *Poecilia (Mollienisia) latipinna* – today the subgenus *Mollienisia* is usually submerged into the subgenus *Poecilia* so that the example becomes *Poecilia (Poecilia) latipinna.*
Amazingly, little has changed regarding the "sail-finned" mollies – there are still three species recognized. The status of the "short-finned" mollies has changed considerably. In 1950 Dr. Hubbs mentions only three species. By 1983, Dr. R. R. Miller recognized "at least 16" taxa in the subgenus *Mollienisia* and eight species from Mexico alone [ref: Copeia 1983(3), pp. 817-822 – "Checklist and key to the mollies of Mexico"]. Since 1983, I know of at least two more molly species that have been formally named: *Poecilia teresae* Greenfield 1990 from Belize and *Poecilia marcellinoi* Poeser 1995 from El Salvador.

Species and Hybrids of Mollienisia

(reprinted from AQUARIUM HIGHLIGHTS, Innes Publishing Company, 1951)

By Dr. Carl L. Hubbs

In responding to requests for an article on the species and hybrids of Mollienisia, I want first of all to ask my readers to do some quick forgetting. A more-than-usual number of errors have in one way or another crept into the general understanding of the species Mollienisia, and of their breeding behavior.

Thus the name Mollienisia sphenops is often applied by aquarists to the black sport or melanisitic mutation of Mollienisia latipinna, whereas Mollienisia sphenops, as indicated below, is a distinct species which is normally not black.

The hybrid between latipinna and sphenops has been named Mollienisia formosa, but to make matters worse this name formosa has been wrongly used. Thus the eminent German aquarist Rachow figured typical sphenops under the name formosa, while the great English ichthyologist Regan applied that abused name to latipinna from Tampico and also to sphenops from Panama. Presumably neither Rachow nor Regan ever saw the true formosa, which is in a way also a misstatement, since that name was based on a hybrid.

Another misconception, apparently less general, is that the magnificent species Mollienisia velifera is merely the better-developed individuals of Mollienisia latipinna.

To detail the mistakes of ichthyologists in attempting to build up a sound classification of the species of Mollienisia would carry us too far away from our common interests, and would consume more pages than the editor would spare. Suffice it to say that the fish scientists have blundered even more than the fish fanciers.

Mollienisia is a genus belonging to the viviparous (livebearing) family Poeciliidae. In one form or another this genus is too well known to aquarium fanciers to require any extended general introduction.

The species of Mollienisia fall naturally into two types, the latipinna group or sailfins and the sphenops group, or short-finned Mollys. In the first and more familiar group (figs. 1-3) the dorsal or back fin contains twelve to nineteen rays and in the adult male begins well toward the head. In the sphenops group the dorsal fin has only eight to eleven rays, and this fin begins behind or at most near the middle of the length of the fish, not including the caudal or tail fin. This difference is readily seen in the pictures.

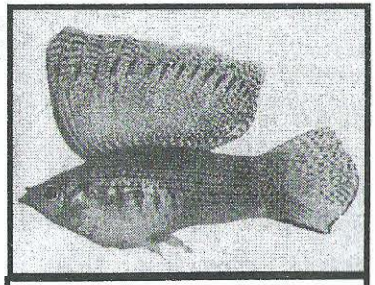

Fig. 1

The Sailfins
(Mollienisia velifera and Mollienisia latipinna)

First, naturally, comes the king of the livebearers, the gorgeous Mollienisia velifera of Yucatan (Fig 1), half again as large and splendid as our native latipinna. His crowning glory, literally, is his resplendent dorsal fin, beginning immediately behind the head,

and extending over a base which is more than half as long as the head and body, without tail fin. The dorsal rays number sixteen to nineteen. The lighter markings on this fin are in the form of dark-ringed spots. The breast and throat are bright brassy, while the sides of the body and the main fins shine out in metallic blue reflections. The colors show up best when two more-than-four-inch males display before one another, spreading their great iridescent fins almost to the breaking point. Broods run as high as 120, and the young are robust and heavy-set from birth.

A relative of Mollienisia velifera, known only from Lake Peten in Guatemala, is Mollienisia petenensis. This has been later imported, and is illustrated elsewhere in the present volume.

Another cousin of velifera is the best known species of the genus, namely, Mollienisia latipinna. This is the common sailfin of the Southern States, ranging from southern Georgia to Key West, thence around the whole Gulf coast to Texas, and down the east coast of Mexico. Over this long range the species breaks up into local races or subspecies, some of which rather closely approach velifera in size and development of fins. The salt-water races of Key West and of Pensacola Bay are particularly fine. A pair of the typical subspecies – an average race, which occurs in fresh water from Florida to Louisiana – is shown in Fig. 3. Near Brownsville, Texas, there occurs a small race of Mollienisia latipinna, which though bright in color is much less like velifera. The dorsal fin is smaller, and has only twelve to fourteen rays. The relatively poor development of latipinna here (and about Tampico) may be due to the fact that its ancestors were none too careful about choosing mates, occasionally hybridizing with Mollienisia sphenops. Toward the north end of the range of the species, in northeastern Florida and southeastern Georgia, the species is also much reduced in size and general development, probably because the temperatures there are rather low for the genus.

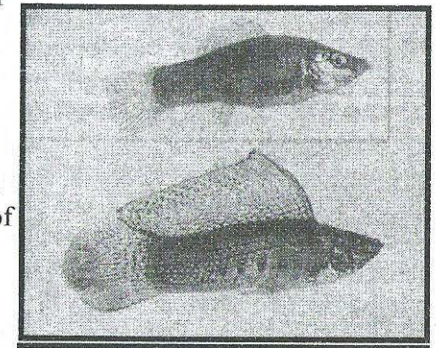

Fig. 3
A pair of *M. latipinna* from Mississippi

Were it not for the superior elegance of velifera, we would rank

Mollienisia latipinna as king; as it is, we may dub him the prince of the livebearers, and the crown prince at that. A good male has his "crown'" or dorsal fin, beginning not far behind the head, and when laid down overlapping the caudal fin. The base of the fin is rather less than half the length of the fish (without the tail fin), and the in contains twelve to sixteen rays. The dark markings on the dorsal fin form streaks but do not surround round light spots. The dorsal and caudal fins and the body show the same sort of brilliant blue and brassy reflections as in velifera. Watching a fine male court his more somber lady is a sight never to be forgotten. He slides up alongside of his mate of the moment, then heads around quickly in front of her, the better to display his greatest entrancement, the dorsal fin held taut like a peacock's tail, and similarly resplendent with metallic sheens. He may also use the fin in more practical fashion, as a net to hold back the female if she tries to avoid his advances. At times, unable to restrain himself in his customary dignity of movements, he will flash almost instantaneously, right-left, right-left, in front of his ladylove. As though most

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concerned in the display of his nuptial dress, he actually mates with the females less often than do his smaller and less ornate cousins. The transference of sperm into the oviduct of the female is accomplished by means of the modified anal fin (gonopodium), in an almost instantaneous act.

The Short-finned Mollys

(Mollienisia sphenops and Mollienisia latipunctata)

The true Mollienisia has nothing to do with the black molly, which is merely a sport of Mollienisia latipinna. It is distinguished from Mollienisia latipinna chiefly in having the dorsal fin much smaller, confined to the second half of the body length not counting the caudal fin, and containing eight, nine, or ten dorsal rays, depending on the race. It is usually a small fish, some races being not tremendously larger than the guppy, although other races are as big and robust as velifera. Over its immense natural range (northern Mexico to northern South America) it is represented by an undetermined number of local races, or subspecies. The male is a bright and active fish, with lemon-yellow bands near the margins of the dorsal and caudal fins. The caudal is especially fine, as the male seems to realize when he displays in front of a mate.

Other subspecies of Mollienisia sphenops are very different in color and in fin development. We are breeding three kinds, but have seen many other kinds as preserved specimens. They will probably all prove to be active and attractive, and to breed well in warm aquaria (we run our aquaria in the upper seventies, rarely dropping a bit below 70 degrees and rarely going much above 80 degrees Fahrenheit). They feed well on dried shrimp and other prepared foods, as do the other species of Mollienisia, and, like them, also enjoy algae from the sides of the tanks. They do not eat their young (we have found this true of our latipinna also, though velifera is sometimes cannibalistic).

The second species of short-finned Mollienisia is Mollienisia latipunctata. This is as closely confined in nature as sphenops is wide-ranging. It occurs only in the Rio Tamesi and its tributaries, just north of Tampico, Mexico. It lives there with sphenops, but so far as we know does not hybridize with it. The females always show a row of black spots along the sides. The males are very splendid little fellows, with a high dorsal fin (of nine to eleven rays), strongly peppered with black specks, as is also the caudal fin. The black

markings along the side are faint, but dark bars show up. On the lower sides of the body are rows of orange spots, faintly shown in the figure.

Mollienisia latipunctata was introduced into America a few years ago by Dr. Myron Gordon, and is apparently not known in Europe. It is rather attractive and, of course, novel in aquaria, but if our experience is a criterion, has one drawback. It produces very small broods, and though the young are very large at birth, they develop very slowly.

A third short-finned species, Mollienisia dominicensis, is now recognized from the island of Haiti, but it has apparently not reached aquarists.

Hybrids

We have not yet succeeded in crossing any species of Mollienisia with any other genus of the family. Males of Lebistes reticulatus, Gambusia affinis, and Poecilistes pleurospilus have mated with females of Mollienisia in our aquaria, but as yet we have had no young as a result. We would greatly appreciate hearing of any young produced from any cross-matings between these or any other of the live-bearing genera (other than the common Platypoecilus x Xiphophorus cross), and if possible we would like to see the specimens. To be sure of the male parentage of the young of a live-bearing fish, one should be certain that the mother was never associated with mature males of more than one species. The females, as is well known, store the sperm for months.

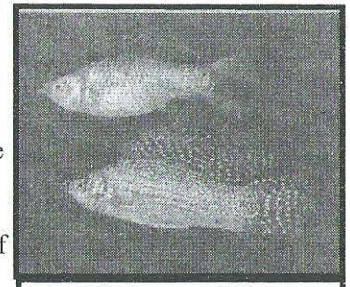

Fig. 2
Above: *velifera* X *sphenops* hy-

Hybrids do occur, however, between the species of Mollienisia. The upper fish shown in Fig. 2 is almost certainly a hybrid between Mollienisia velifera and Mollienisia sphenops. This combination is not well known, for I have seen but one specimen (not the one figured). These two specimens are regarded as hybrids because they are intermediate in color and in size and in position of the dorsal fin and in the number of rays in that fin. The two hybrids have thirteen and fourteen dorsal rays respectively, while the Yucatan sphenops has nine or ten, and the Yucatan velifera sixteen to nineteen.

The hybrid between latipinna and sphenops (the supposed species Mollienisia formosa) we have learned to know very much better.

These hybrids are also intermediate in almost all characteristics between the parent species. Thus the number of dorsal rays is usually eleven, as compared with nine in the subspecies of sphenops of northeastern Mexico, and thirteen in the local race of latipinna. These hybrids are not uniform from different localities, but take on to some degree the characteristics of the particular race (subspecies) of sphenops which gave rise to them.

In some parts of Mexico both male and female hybrids occur. The only specimens of male hybrids we have seen are included in the fish caught by Dr. Gordon in the Rio Papaloapan in Mexico, for the Crescent Fish Farm (we are much indebted to Mr. Schaumberg for specimens of these hybrids, and of other fishes used in our experiments). The mature males are very fine aquarium fish, as they seem to show hybrid vigor in intensity of color. The dorsal fin is strikingly spotted with black; the body is often blotched with inky spots; the caudal fin is somewhat yellow toward the margin, and the breast and throat show the brilliant brassy yellow reflections of velifera. They vary a great deal in form and in color. They are very active in their feeding and especially in their mating behavior. They therefore have claims other than novelty to attract the aquarist. Unfortunately we have found them rather difficult to breed, but that may be partly our fault, as Mr. Schaumberg has done better along that line.

The strange circumstance about the latipinna x sphenops hybrids is that they exist only as females over much of their natural range. In part of this area, as in Tamaulipas, Mexico, these females live inland with sphenops, never seeing a latipinna male. Conversely, about Brownsville in Texas, the all-female hybrids live only with latipinna, because sphenops does not occur so far north.

The discovery of how this hybrid type maintains itself as one sex only in nature (where it is very abundant) is an example of how aquarium experiments can make contributions to biology. The explanation proves to be as follows: the female hybrids mate with either kind of male, sphenops or latipinna. The sperm from the male appears to be necessary to start off development of the young, but the sperm does not seem to take any part in determining the inheritance of the young, for these are always exactly like their mother, showing no paternal characteristics whatever. This would appear to be a kind of parthenogenesis, the first case of natural parthenogenesis indicated for a vertebrate animal. The young are invariably females. These novel conclusions have all been checked in our aquarium matings, by which we have also been able to reconstruct this peculiar hybrid type, by crossing Mollienisia sphenops with Mollienisia latipinna.

DO YOU HAVE A FISHROOM?

Big, small, attached to your house, unattached, basement, or whatever, if you have a fishroom with an emphasis on livebearers, we'd like to know about it. Our December issue will be feature information on members' fishrooms, and we'd like to hear from you. We'd also like to include photos of your fishroom. Fishroom "tips" that you have discovered will also be used. If you can help, e-mail all the interesting facts about your fishroom to the editor at

billandbonnie@peoplepc.com

Photographs can be scanned and attached.

OR

Send the information and photos to the editor at the address on the front cover of this issue.

Public Service Announcement for Those With Children

by Don Dickson

1. Playdoh truly IS non toxic. This is a good thing.
2. Playdoh dissolves into a fine powder in water.
3. 2 year olds seem to believe Playdoh is an excellent tank decoration.
4. Fish don't seem to mind Playdoh in their tank.
5. Yellow seems to be the preferred color, white drawing a close second.

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The ALA is actively soliciting and accepting donations to the Vern Parish Fund. The Fund will be maintained independently from the ALA general treasury in a separate high interest bearing account. The ALA will draw on the interest of this Fund to provide cash grants to graduate level research students actively engaged in the study of livebearing fish.

Pat Hartman and Jim Langhammer have been appointed as Co-Chairmen of the Vern parish Fund. Pat will lead the pursuit of contributions and publicity while Jim will maintain the actual account and provide contacts with the academic community. Please feel free to contact either if you need any additional information.

All checks should be made payable to the American Livebearer Association and sent directly to Jim Langhammer at the address below. Thank you.

Pat Hartman
12852 S. 18th St.
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2101 N. Vermont
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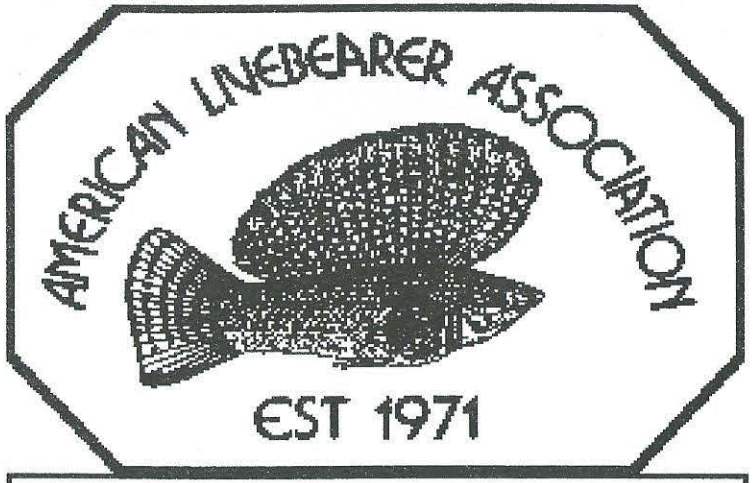

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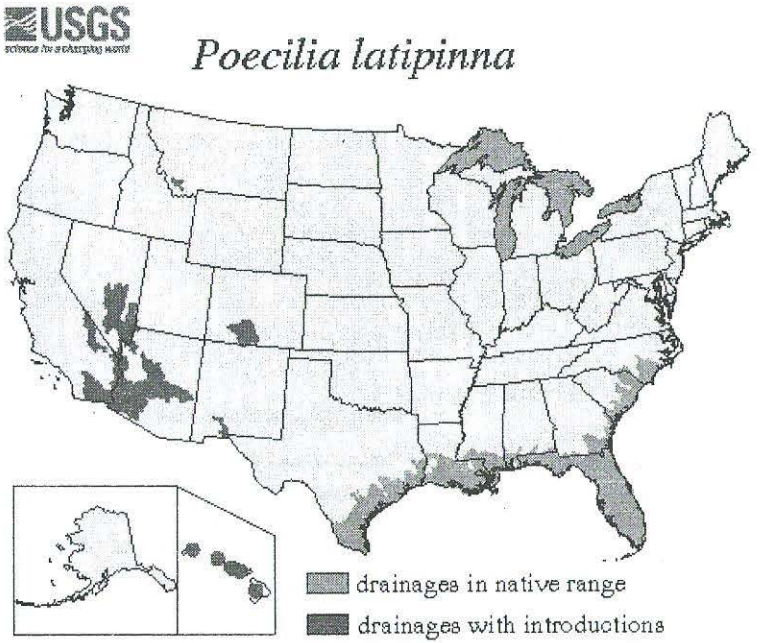
IN OUR OWN BACKYARD

*Have you ever wanted to collect mollies, but haven't had a chance to go to Mexico or even the Gulf Coast? According to this article reprinted from the United States Geological survey, a collecting site for sailfin mollies may be closer to you than you think! And, once again, never, NEVER, **NEVER**, release your fish into the wild!*

Poecilia latipinna (Lesueur 1821)

Common Name: sailfin molly.
Identification: Distinguishing characteristics given by Miller (1983), Hubbs et al. (1991), Menhinick (1991), and Page and Burr (1991); a formerly used name is *Mollienesia latipinna* (Miller 1983). Miller (1983) gave a key to this species and other Mexican *Poecilia*. Photographs of wild-caught and aquarium strains appeared in Wischnath (1993).
Native Range: Atlantic and Gulf Coast drainages from Cape Fear drainage, North Carolina, to Veracruz, Mexico. Restricted to coastal areas in most of range; found farther inland in Florida, Louisiana, and Texas (Page and Burr 1991).
Size: 15 cm.

Nonindigenous Occurrences: This species has been introduced into several areas of **Arizona** (Minckley 1973; Lee et al. 1980 et seq.); parts of southern **California** (Shapovalov et al. 1959, 1981; St. Amant 1966; Minckley 1973; Mearns 1975; Moyle 1976a; Schoenherr 1979; Lee et al. 1980 et seq.; U.S. Fish and Wildlife Service 1983a; Swift et al. 1993; Williams et al. 1998); waters in Conejos County, **Colorado** (Woodling 1985; Zuckerman and Behnke 1986); all major islands of **Hawaii** (Seale 1905; Van Dine 1907; Brock 1960; Maciolek 1984; Devick 1991b); Trudau Pond, Madison County, **Montana** (Holton 1990); several springs in **Nevada** (La Rivers 1962; Deacon et al. 1964; Hubbs and Deacon 1964; Minckley 1973; Lee et al. 1980 et seq.; Courtenay and Deacon 1982; Deacon and Williams 1984); Dona Ana County, **New Mexico** (Sublette et al. 1990); and spring-influenced headwaters in central **Texas** (Brown 1953; Hubbs et al. 1991).
Means of Introduction: In most areas this species probably was intro-



duced by way of aquarium releases. It was first brought to Hawaii from Texas in 1905 to test its effectiveness in controlling mosquitoes (Seale 1905; Van Dine 1907; Brock 1960). A failure in Hawaii at mosquito control, this fish has on occasion been used as a tuna baitfish in that state (Randall 1987).
Status: Established or locally established in Arizona (Minckley 1973), California (Swift et al. 1993), Colorado (Zuckerman and Behnke 1986), Hawaii (Devick 1991b), Montana (Holton 1990), Nevada (Deacon and Williams 1984), and Texas (Hubbs et al. 1991).
Impact of Introduction: The sailfin molly is responsible for the decline of the desert pupfish *Cyprinodon macularius* in California (U.S. Fish and Wildlife Service 1983a). Sigler and Sigler (1987) stated that the sailfin molly has probably impacted native species adversely. Sailfin mollies, and other introduced poeciliids, have been implicated in the decline of native damselflies on Oahu, Hawaii. Often the distributions of the damselflies and introduced fishes were found to be mutually exclusive, probably resulting from predation of the fish on the in-

sects (Englund 1999).

Remarks: The sailfin molly has been stocked for mosquito control, even though it is largely or completely herbivorous (Courtenay and Meffe 1989). Records of this species in a few areas apparently are based on reports of the black molly, a hybrid, and not pure *P. latipinna* (Courtenay and Meffe 1989). Wischnath (1993) stated that U.S. commercial breeders have released various domestically bred forms, including *P. latipinna* hybrids, into natural waters. Contrary to Brown (1953) and Hubbs et al. (1991), Lee et al. (1980 et seq.) argued that *P. latipinna* found in inland waters of Texas were native. Improperly citing Van Dine (1907), Kanayama (1968) incorrectly used the name *Mollienesia latipes* for the species introduced to Hawaii.

Voucher specimens: California (LACM 36402-3), Montana (UMMZ 188981).

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Author: Leo Nico

Revision Date: 22 September 1999

Mollies in Florida

By Dave Hackenberg

I often travel to Florida to visit my inlaws and usually take the opportunity to observe and sometimes collect wild fishes, including sailfin mollies. Shallow running waters, including tidal streams, are best. Spring waters are most predictable, since they are less subject to rain drought and tides. A good example is the Weeki Wachee River and the most reliable place to see mollies, including some with heavy black mottling, is a little brooklet in a garden just inside the attraction at the intersection of U.S. 19 and State Road 50. Whereas my main collecting site in a roadside ditch along Rt. 50 is becoming increasingly overgrown with bushes, the brooklet in the Weeki Wachee Springs attraction is kept open and neat.

Another almost wild setting is at the Florida Aquarium in Tampa. In one exhibit is a cut-away into a typical shallows of a Florida stream. Through glass or from above you see hundreds of mollies displaying, fighting, and occasionally being pursued by herons.

My best sighting of mollies in a purely natural setting was from a canoe on the Withlacoochee river at Nobleton. Other pretty fishes were bluefin killies and taillight shiners. Also pretty was a little slider turtle. Not so pretty were large alligators sunning themselves on the bases of large cypress trees.

Wild Florida mollies, Poecillia latipinna, in clear sunny water, shine brightly with gold and iridescent blue. This is a sight I wish for all molly lovers!

Color Variations in Wild Mollies

By Linn Blanchard

(Reprinted from **American Currents**, *the publication of the North American Native Fishes Association. First published Fall, 1982).*

Southeastern Louisiana is at or below sea level, and water is everywhere. When a road is built above the level of the surrounding marsh or swamp, ditches are created on either side. At frequent intervals, culverts beneath the roads allow water to flow from one side to the other. These ditches also are joined by smaller watercourses, which disappear into the swamp or marsh. Thus, a city-dweller may drive for twenty minutes, pull onto a reinforced shoulder, and easily observe the aquatic residents of a marsh or swamp.

The most ubiquitous of these are Gambusia, *Poecilia latipinna*, and crawfish, in that order. Where the water is brackish, the crawfish are replaced by swimming crabs. The mollies are everywhere. In brackish water, they live peacefully with *Adinia xenica* and *Cyprinodon variegatus*. In freshwater, they are found with *Fundulus chrysotus* and *Heterandria formosa*.

Here in a suburb of New Orleans, my son discovered large green sailfin mollies in a drainage ditch behind a service station. There is an oily film on the water, refuse in the water, and the Mosquito Control Board sprays periodically throughout the summer. The water is teeming with mollies! This ditch eventually joins a large drainage canal to a pumping station, which keeps our town above water.

Five minutes walk from my house is another drainage canal where the large female sailfin mollies are escorted by gleaming gold males. The females are dull green, as seen at the site already mentioned. This canal is fed by seepage from adjacent woods and illegal garbage dumps, and by street run-off. Long before the city surrounded it, this was a natural bayou, and the aquatic plants are still profuse, mostly Sagittaria and Ludwigia species with occasional stands of cattails. All are at home in shallow water, which can suddenly swell to six feet after a heavy rain. Since no trees block the sun, there is a heavy growth of algae. The muddy bottom and banks are riddled with crawfish burrows, much to the delight of the neighborhood children. Everybody goes crawfishing on spring afternoons.

Not far out of town along state roads I have found three other color

variations in male mollies. All are Sailfins and two are similar; their tailfins flash aquamarine blue in the sunlight. The largest of what I call "blue-tail mollies" are found in shallow, hard, alkaline water surrounded by heavy vegetation. The erect dorsal fin displays a row of black circles below the black margin. The body is silver with rows of tiny reddish dots throughout its length that appear to be stripes but aren't. The females are silver with the "striping" and colorless fins.

My favorite of the blue-tails has a red head, a red zone in the tailfin, and vertical barring below the lateral line. The tailfin has a black margin on the top and bottom. The erect dorsal lacks the black circles and black margin: there are fine black reticulations that give it a delicate appearance. The overall effect in bright sunlight is red, blue, and silver - - breathtaking. The females are also silver with the stippled "striping" and colorless fins.

The fifth color? They are black and the site is a secret. Their locale will be safe for some time to come, and it seems a betrayal of a privilege to disturb them.

All the mollies are found in shallow, very warm water. On cold February days, they seek the sun and thrive on the algae, which the sunlight fosters. Using a Tetra Hardness Kit, I have tested water samples from all the collecting sites. It ranges from DH 6 to 30+ in brackish water; pH has ranged from 7.0 to over 9.0.

Collecting is gentle and does not disturb the substrate or vegetation. I use an 8" minnow net with a 30" wooden handle and just rest it on the bottom. In a few minutes, all the fish resume their activities; when they swim over the net, I raise it. This method of netting provides ample opportunity to observe the social order.

The fish are transported in foam six-pack coolers (cheap) with the bags open and the lids off (it's hot down here).

Crescent Fish Farm and the Development of the Black Molly

by Bill Allen

Wischnath, in "Atlas of Livebearers of the World" attributes the development of the black molly to "Crencenty, a New Orleans breeder" (page 286). Jacobs, in "Livebearing Aquarium Fishes" gives credit for the first all black mollies to "Crescenty in New Orleans".

Crencenty? Or Crescenty? Which is correct? Who was the man that developed a fish whose descendents have been in almost every beginner's fish tank? Actually, I believe that it was neither. There was not a breeder named Crencenty or Crescenty. But there was a *Crescent Fish Farm!*

Let me quote from an e-mail that I received from Leo Arieux, a life-long resident of New Orleans, Louisiana. New Orleans is known as the "Crescent City" because of the shape it takes in skirting the banks of both the Mississippi River and Lake Pontchartrain (the lake, by the way, from which the type specimens for *Poecilia latipinna* were collected).

> "Remind me to relate some fish stories about buying fish from the Crescent City Fish Farm (went out of business many years ago) in its hay day[sic]. The gentleman who owned and operated it was supposed to have been the person who developed the Black Molly. I do not know if that is so but the Black Molly he developed was truly awesome, both in size and
> color. The females were approx. 5 1/2 to 6 inches long and almost as big around as a kosher knackwurst. The males were approximately as large with a dorsal fin about 3 inches wide and a milk chocolate edge on top. I remember reading a trade magazine from about 1919 or 1920 listing a trio of the same mollies selling for $ 25.00. That was a hell of a lot of money for three fish...especially considering you could buy a steak with all of the trimmings for $.25. The gentleman's name was Mr, Schamburg, never knew his first name. God forbid we should have called him anything other than Mr. Schamburg. The memories of his retail/wholesale outlet on Mandeville St. remain quite vivid to this day. I wrote a story for the Southern Betta Society on my first trip to CCFF back in the early fifties and how it formed my life long love of fish".

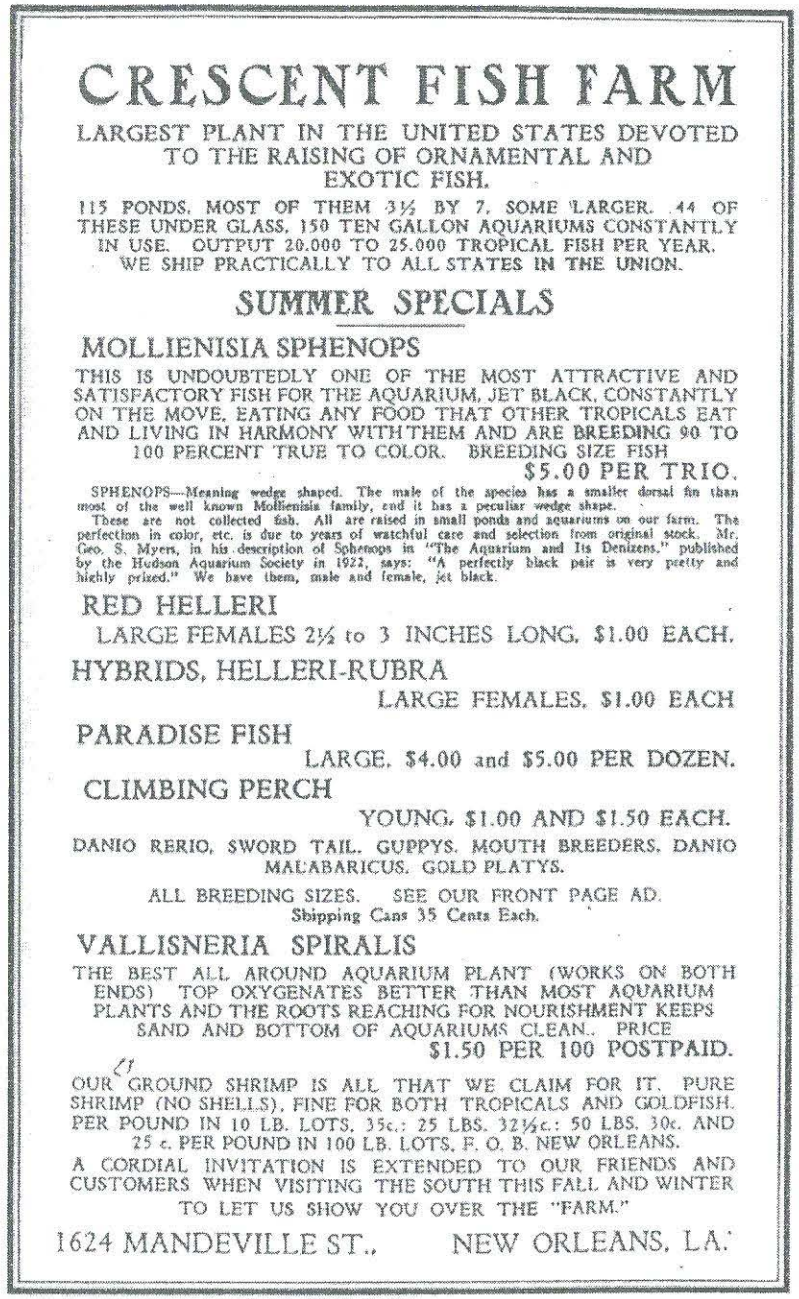
Although both German writers (Jacobs and Wischnath) men-

tion the breeder of these fish, I believe that something was "lost in the translation" and "Crescent Fish Farm" was corrupted into the two forms used by the writers and mistakenly used as the breeder's name! So, one of the breeders of the first black mollies was Mr. Schaumburg (variously spelled as Schomberg, Schamberg, or Schaumberg) of Crescent Fish Farm. And although Mr. Arieux seems to remember the firm's name as Crescent *City* Fish Farm, their own literature omits the word "city".

Ross Socolof's very interesting book, **Confessions of a Tropical Fish Addict**, states that Jack Beater developed a "mostly black" sailfin molly from the marbled mollies which occasionally show up in wild green molly populations. However, he provided breeding stock to Schaumberg and Bill Sternke. These two gentlemen produced the first all black mollies which bred mostly true. In Dr. C. L. Hubbs' article in this issue, he thanks Mr. Schaumberg for providing some of the fish used in his hybridizations.

B.G. Granier from Baker, Louisiana, has shown me some beautiful marble sailfin mollies that he collected in Bayou LaCombe, Louisiana, which is connected to Lake Pontchartrain and is near Mandeville, Louisiana. Crescent Fish Farm had some ponds in Slidell, a town not too far away. In another article in this issue of **Livebearers**, Linn Blanchard mentions a population of wild black mollies near Gretna Louisiana – she won't give the specific location. Is it possible that these mollies are descendents of the same stock that Mr. Schaumberg used developing the black molly? It's possible. It's also possible that these are descendents of Mr. Schaumberg's fish released back into the area, either accidentally or on purpose, especially the Bayou LaCombe population because of its nearness to Slidell.

We hope that you have enjoyed our special "Mollies and Related Species" edition of **Livebearers**. *For more relevant articles on this group of fishes, order ALA Special Publication Number 3,* **The Genus Poecilia; Mollies, Limias, and Related Species**. *An order form is on Page 19 of this issue.*



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May 1925

An early ad for Crescent Fish Farm, reprinted from **Confessions of a Tropical Fish Addict** *by Ross Socolof. Used by permission*

LIVEBEARERS Contributors

Listed below are the authors who have contributed to this issue of ***LIVEBEARERS.*** If you wish to contact an author feel free to do so. Please be sure to include a self-addressed stamped envelope (SASE) if you wish a reply. However, authors are under no obligation to reply to any correspondence sent to them even if a SASE has been included.

Bill Allen, "Crescent Fish Farm and the Development of the Black Molly" 3400 St. Helens Drive, Shreveport, LA 71108 billandbonnie@peoplepc.com

Linn Blanchard, "Color Variations in Wild Mollies" Attempts to find this author have been unsuccessful.

Dan Fromm, "Genera? Subgenera? Why Should We Care?", and "What is the Fish Circulating in the Hobby as *Limia (Odontolimia) garnieri*?" Dan Fromm, 1012 Haral Pl., Cherry Hill, NJ 08034 . 76266.333@compuserve.com

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Bill Kohler, "The Tiger Limia" 1398 June Dr., Maumee, OH 43537. goodied@juno.com

Leo Nico, "In Our Own Backyard" Reprinted from the U.S. Geological Survey. Leo_nico@usgs.gov.

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